

Listing of Claims

1. (Currently Amended) A method for providing simultaneous voice and data (SVD) service in a mobile communication system, comprising:

performing SVD call processing that supports SVD service between mobile terminals and base stations by using a SVD service option, wherein performing said SVD call processing includes:

providing said SVD service by transmitting or receiving voice and packet data simultaneously using at least one radio link protocol (RLP) frame after service negotiation is performed using the SVD service option, wherein providing said SVD service comprises:

transforming a packet data frame into a data RLP frame;

transforming a voice frame into a voice RLP frame;

multiplexing the data RLP frame and voice RLP frame to form said at least one RLP frame; and

transmitting said at least one RLP frame, wherein a type of the voice RLP frame is designated by information included in a frame type field or a control field not used for data in the data RLP frame.

2. (Previously Presented) The method of claim 1, wherein performing said SVD call processing designates and uses a service reference ID for the SVD service option, which is different from a pre-designated voice service option or packet data service option.

3. (Previously Presented) The method of claim 1, further comprising implementing in a media access control (MAC) sub-layer a voice RLP module, wherein the voice RLP module transforms the voice frame into the voice RLP frame to be included in said RLP frame, so that voice and packet data can be transmitted together in said RLP frame, and wherein the voice RLP module transforms a voice RLP frame included in another RLP frame received through a physical layer into a voice frame for processing by an upper layer.

4. (Currently Amended) A method of providing simultaneous voice and data (SVD) service in a mobile communication system, comprising

performing SVD call processing that supports SVD service between mobile terminals and base stations by using a SVD service option, wherein performing said SVD call processing includes:

providing said SVD service by transmitting or receiving voice and packet data simultaneously using at least one radio link protocol (RLP) frame after service negotiation is performed using the SVD service option, wherein providing the SVD service includes:

designating a voice RLP frame type using one or more bit combinations in a frame type field not used for data in a data RLP frame, the voice RLP frame generated based on the voice data and the data RLP frame generated based on the packet data;

multiplexing the data RLP frame and voice RLP frame to form said at least one RLP frame; and

transmitting said at least one RLP frame.

5. (Currently Amended) A method of providing simultaneous voice and data (SVD) service in a mobile communication system, comprising

performing SVD call processing that supports SVD service between mobile terminals and base stations by using a SVD service option, wherein performing said SVD call processing includes:

providing said SVD service by transmitting or receiving voice and packet data simultaneously using at least one radio link protocol (RLP) frame after service negotiation is performed using the SVD service option, wherein providing the SVD service includes:

designating a voice RLP frame type using one or more bit combinations in a control field not used for data in a data RLP frame, the voice RLP frame generated based on the voice data and the data RLP frame generated based on the packet data;

multiplexing the data RLP frame and voice RLP frame to form said at least one RLP frame; and

transmitting said at least one RLP frame.

6. (Canceled)

7. (Previously Presented) The method of claim 1, wherein the voice frame type is designated using one or more bit combinations in the frame type field not used for data in the data RLP frame, if the voice frame is a full rate voice frame.

8. (Previously Presented) The method of claim 7, wherein the voice RLP frame, which is generated from the full rate voice frame, comprises 168 bits of voice frame information and 3 bits of information indicating the voice RLP frame type.

9. (Previously Presented) The method of claim 1, wherein the voice frame type is designated using one or more bit combinations in the control field not used for data in the data RLP frame, if the voice frame is a half rate voice frame or a voice frame under 1/2 rate.

10. (Previously Presented) The method of claim 9, wherein the data RLP frame is one of control frame, fragmented/assembled data frame, fill frame, or idle frame.

11. (Previously Presented) The method of claim 9, wherein the voice RLP frame is a half rate voice RLP frame or a voice RLP frame under 1/2 rate comprising 8 bits and 66 bits of voice frame information and wherein 6 bits of control field information are used to indicate the voice RLP frame type.

12. (Previously Presented) The method of claim 9, wherein the voice RLP frame is a 1/4 rate voice RLP frame comprising 8 bits and 26 bits of voice frame information and wherein 6 bits of control field information are used to indicate the voice RLP frame type.

13. (Previously Presented) The method of claim 9, wherein the voice RLP frame is a 1/8 rate voice RLP frame comprising 8 bits and 6 bits of voice frame information and wherein 6 bits of control field information are used to indicate the voice RLP frame type.

14. (Currently Amended) A method for providing simultaneous voice and data (SVD) service in a mobile communication system, comprising:

performing SVD call processing that supports an SVD service through a SVD request signaling message exchange, when SVD service is requested after packet data call setup between a mobile terminal and a base station is completed, wherein performing said SVD call processing includes:

providing said SVD service by transmitting or receiving voice and packet data simultaneously using at least one radio link protocol (RLP) frame after service negotiation is performed through the SVD request signaling message exchange, wherein providing the SVD service includes:

designating a voice RLP frame type using one or more bit combinations in a frame type field not used for data in a data RLP frame, the voice RLP frame generated based on the voice data and the data RLP frame generated based on the packet data;

multiplexing the data RLP frame and voice RLP frame to form said at least one RLP frame; and

transmitting said at least one RLP frame.

15. (Previously Presented) The method of claim 14, further comprising implementing in a media access control (MAC) sub-layer a voice RLP module, which transforms the voice frame into the RLP frame so that the voice RLP frame and data RLP frame can be multiplexed and transmitted in the RLP frame.

16. (Canceled)

17. (Currently Amended) A method of providing simultaneous voice and data (SVD) service in a mobile communication system, comprising

performing SVD call processing that supports SVD service through SVD request signaling message exchange, when SVD service is requested after packet data call setup between a mobile terminal and a base station is completed, wherein performing said SVD call processing includes:

providing said SVD service by transmitting or receiving voice and packet data simultaneously using at least one radio link protocol (RLP) frame after service negotiation is performed through the SVD request signaling message exchange, wherein providing the SVD service includes:

designating a voice RLP frame type using one or more bit combinations in a control field not used for data in ~~or~~ a data RLP frame, the voice RLP frame generated based on the voice data and the data RLP frame generated based on the packet data;

multiplexing the data RLP frame and voice RLP frame to form said at least one RLP frame; and

transmitting said at least one RLP frame.

18. (Currently Amended) A method of providing simultaneous voice and data (SVD) service in a mobile communication system, comprising:

performing SVD call processing that supports SVD service through SVD request signaling message exchange, when SVD service is requested after packet data call setup between a mobile terminal and a base station is completed, wherein performing said SVD call processing includes:

providing said SVD service by transmitting or receiving voice and packet data simultaneously using at least one radio link protocol (RLP) frame after service negotiation is performed through the SVD request signaling message exchange, wherein providing said SVD service comprises:

transforming a packet data frame into a data RLP frame;

transforming a voice frame into a voice RLP frame;

multiplexing the data RLP frame and voice RLP frame to form said at least one RLP frame; and

transmitting said at least one RLP frame, wherein a type of the voice RLP frame is designated by information included in a frame type field or a control field not used for data in the data RLP frame.

19. (Previously Presented) The method of claim 18, wherein the voice RLP frame type is designated using bit combinations in the frame type field not used for data in the data RLP frame, if the voice frame is full rate voice frame.

20. (Previously Presented) The method of claim 19, wherein the voice RLP frame comprises 168 bits of voice frame information, and wherein 3 bits of frame type information are used to indicate the voice RLP frame type.

21. (Previously Presented) The method of claim 18, wherein the voice RLP frame type is designated using bit combinations in the control field not used for data in the data RLP frame, if the voice frame is a half rate voice frame or a voice frame under 1/2 rate.

22. (Previously Presented) The method of claim 21, wherein the data RLP frame is one of control frame, fragmented/assembled data frame, fill frame, or idle frame.

23. (Previously Presented) The method of claim 21, wherein the voice RLP frame is a 1/2 rate voice RLP frame comprising 8 bits and 66 bits of voice frame information and wherein 6 bits of control field information are used to indicate the voice RLP frame type.

24. (Previously Presented) The method of claim 21, wherein the voice RLP frame is a 1/4 rate voice RLP frame comprising 8 bits and 26 bits of voice frame information and wherein 6 bits of control field information are used to indicate the voice RLP frame type.

25. (Previously Presented) The method of claim 21, wherein the voice RLP frame is a 1/8 rate voice RLP frame comprising 8 bits and 6 bits of voice frame information and wherein 6 bits of control field information are used to indicate the voice RLP frame type.

26. (Previously Presented) A mobile communication apparatus having a service interface comprising:

a voice radio link protocol (RLP) module to transform voice data into a voice RLP frame; and

a data RLP module at a MAC sub-layer to transform packet data into a data RLP frame, wherein the voice and data RLP frames are multiplexed and simultaneously transmitted together in an RLP frame based on outputs of the voice RLP module and data RLP module, wherein a frame type field or a control field not used for data in the data RLP frame is used to designate a type of the voice RLP frame.

27. (Previously Presented) The apparatus of claim 26, wherein the data RLP module is also configured to perform fragmentation of packet data frame from another RLP frame received from a physical layer.

28. (Previously Presented) The apparatus of claim 26, the voice RLP module is also configured to perform fragmentation of a voice frame derived from another RLP frame received from a physical layer.

29. (Previously Presented) The apparatus of claim 26, wherein voice RLP frames are classified into one or more of full rate voice RLP frames, half rate voice RLP frames, quarter rate voice RLP frames, or eighth rate voice RLP frames.

30. (Previously Presented) The apparatus of claim 26, wherein the apparatus is at least one of a mobile terminal and a base station.

31. (Previously Presented) The apparatus of claim 26, wherein the apparatus is a mobile communication system comprising at least one mobile terminal and at least one base station.

32. (Previously Presented) A method for providing simultaneous voice and data (SVD) service in a mobile communication system, comprising:

performing SVD call processing that supports SVD service between mobile terminals and base stations by using a SVD service option, wherein performing said SVD call processing includes:

providing said SVD service by transmitting or receiving voice and packet data simultaneously using at least one radio link protocol (RLP) frame after service negotiation is performed using the SVD service option, wherein providing SVD service includes:

transforming a voice frame into a voice RLP frame; and

designating a type of the voice RLP frame in a frame type field or a control field not used for data in a data RLP frame, wherein the voice and data RLP frames are multiplexed and transmitted in an RLP frame.

33. (Previously Presented) A mobile communication apparatus having a service interface comprising:

a voice radio link protocol (RLP) module to transform a voice frame into a voice RLP frame; and

a data RLP module at a MAC sub-layer to transmit packet data into a data RLP frame, wherein the voice and data RLP frames are multiplexed and simultaneously transmitted together in an RLP frame based on outputs of the voice RLP module and data RLP module, wherein a type of the voice RLP frame is designated using information in a frame type field or a control field not used for data in the data RLP frame.